Claims.

1. An apparatus (500) for generating a single sideband signal (504) from an input optical signal (502), characterized in that,

an optical phase modulator (508) that performs optical phase modulation on the input optical signal (502) in accordance with a control signal (520) to produce the single sideband signal (504),

a converter (512) that converts a portion of the input optical signal (502) into a corresponding electrical signal, and

a control signal generator (514, 516) that generates the control signal (520) in response to an optical signal pulse shape of the input optical signal (502) represented in the portion of the input optical signal converted into the electrical signal.

2. The apparatus according to previous claim 1, further characterized in that, the electrical analog processor is implemented using the following expression :

$$f(x)=0.5\cdot\log(x)$$

wherein, x represents the converted electrical signal.

3. The apparatus according to previous claim 1, further characterized in that, the electrical analog processor is implemented using the following expression :

$$f(x)=\sqrt{\frac{x}{\bar{x}}}$$

wherein, x represents the converted electrical signal and $\bar{x}$ is the mean value of x.

4. The apparatus according to previous claim 1, further characterized in that, the electrical analog processor is implemented using the following expression :

$$f(x)=\frac{x}{\bar{x}}$$

wherein, x represents the converted electrical signal and $\bar{x}$ is the mean value of x.

5. The apparatus according to any of the previous claims , further characterized in that, wavelength division multiplexor (526) wavelength division multiplexes the single sideband signal (504).

6. The apparatus according to any of the previous claims, further characterized in that, the optical phase modulator (508) performs optical phase modulation on the input optical signal (502), suppressing optical power on at least one of the sidebands of the input optical signal (502).

7. The apparatus according to any of the previous claims, further characterized in that, the control signal generator (514) employs a phase shift transform function.

8. The apparatus according to any of the previous claims, further characterized in that, the control signal generator (514) employs a Hilbert transform function (514).

9. The apparatus according to any of the previous claims, further characterized in that, the control signal generator (524) includes an electrical analog processor that reshapes the electrical signal into a shape expected by the control signal generator.

10. The apparatus according to any of the previous claims, further characterized in that, a delay (510) is introduced

before the optical phase modulator that accounts for a delay in the electrical signal due to electrical component delays.

11. The apparatus according to any of the previous claims, further characterized in that, an optical tap (506) diverts a portion of the power of the input optical signal to the converter.

12. A method for generating a single sideband signal (504) from an input optical signal (502), characterized in that,

converting a portion of the input optical signal tapped into an electrical signal corresponding to the input optical signal,

generating a control signal on the basis of an optical signal pulse shape represented in the portion of the input optical signal converted to the electrical signal, and

optical phase modulating the input optical signal on the basis of the control signal.

13. The method according to previous claim 12, further characterized in that, step of generating utilizes a Hilbert transform to track the shape of the input optical signal.

14. The method according to any of the previous claims 12-13, further characterized in that, tapping a portion of the power signal of the input optical signal (502).

15. The method according to any of the previous claims 12-14, further characterized in that, wavelength division multiplexing the optical signal modulated by the step of optical phase modulating.

16. The method according to any of the previous claims 12-15, further characterized in that, detuning the optical phase

modulator with respect to the center frequency of the input optical signal.